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**APPLICATION  
FOR  
UNITED STATES  
LETTERS PATENT**

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**FOR:                   INFORMATION PROCESSING SYSTEM,  
MOBILE PHONE AND INFORMATION  
PROCESSING SERVER**

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# INFORMATION PROCESSING SYSTEM, MOBILE PHONE AND INFORMATION PROCESSING SERVER

## FIELD OF THE INVENTION

5 [0001]

This invention relates to an information processing system and, more particularly, to an information processing system in which an object from an information processing server is installed by a mobile phone.

## 10 BACKGROUND OF THE INVENTION

[0002]

In a conventional information processing system, a download menu is requested to a server, using a terminal. A user of the terminal selects an object which the user is going to use from the download menu, using a terminal, and subsequently acquires the object (see for example  
15 the Patent Publications 1 to 3).

In the Patent Publication 1, the terminal and the server correspond to a mobile terminal and to a server apparatus, as set forth in claim 1 thereof, respectively. Likewise, in the Patent Publication 1,  
20 the download menu and the object correspond to the list of application programs and to the application program, as set forth in claim 1 thereof, respectively.

In the Patent Publication 2, the terminal and the server correspond to a computer and to a software-supplying host apparatus, as  
25 set forth in claim 1 thereof, respectively. Likewise, in the Patent

Publication 2, the object corresponds to the software as set forth in claim 1 thereof.

In the Patent Publication 3, the terminal corresponds to the mobile terminal device as set forth in claim 1 thereof. Likewise, in the  
5 Patent Publication 3, the download menu and the object correspond to the list of applications and the application, as set forth in claim 1 thereof, respectively.

[0003]

It is desirable that the user be able to promptly acquire the object  
10 which the user is going to use, without the necessity of requesting a download menu (install menu) to a server, by using a terminal, as in the case of a conventional information processing system.

[0004]

[Publication 1]

15 JP Patent Kokai Publication No. JP-P2002-278767A

[Publication 2]

JP Patent Kokai Publication No. JP-A-10-207710

[Publication 3]

JP Patent Kokai Publication No. JP-P2001-134688A

## 20 SUMMARY OF THE DISCLOSURE

[0005]

Accordingly, it is an object of the present invention to provide an information processing system, a mobile terminal, and an information processing server, capable of promptly acquiring an object to be used by  
25 a user.

It is another object of the present invention to provide an information processing system, a mobile terminal, and an information processing server, in which a user is able to use an installed object without confusion.

5 [0006]

The above and other objects are attained by an information processing system in accordance with one aspect of the present invention, which comprises: an information processing server connected to a network and including a server storage device having a plurality of  
10 objects stored therein, each object having unique information and a URL (Uniform Resource Locator) for accessing to said information processing server for updating; and a mobile terminal being connected to said network for transmitting an install request including an install list including said unique information and the URL of an object among said  
15 plural objects that is necessary for installation; said information processing server referring to said install list to select an object for transmission from said plural objects stored in said server storage device to transmit the selected object.

A mobile terminal, in accordance with one aspect of the present  
20 invention, which is connected over a network to an information processing server including a server storage device having stored therein a plurality of objects, includes: a management unit for forming an install list; each of said objects including unique information and a URL (Uniform Resource Locator) for accessing said information  
25 processing server for updating; said unique information and the URL of

needed object necessary for installation, among said plural objects, are stated in said install list; and a communication unit for transmitting an install request including said install list to said information processing server; said install request being such information in which said  
5 information processing server refers to said install list to select the object for transmission from said plural objects stored in said server storage device to transmit the selected object to said communication unit.

An information processing server in accordance with one aspect  
10 of the present invention, which is connected to a mobile terminal over a network, comprises: a server storage device having stored therein a plurality of objects, each of said objects including unique information and a URL (Uniform Resource Locator) for accessing to the information processing server for updating; a server communication unit for  
15 receiving an install request from said mobile terminal; said install request including an install list having therein said unique information and the URL of a needed object, among said plural objects, that is necessary for installation; and a server management unit for referring to said install list for selecting an object for transmission from the plural  
20 objects stored in said server storage device; said server communication unit transmitting the selected object to said mobile terminal.

In the following, means for attaining the above object is now explained using the numerals and symbols used in the preferred embodiments of the invention. These numerals and symbols, added for  
25 clarifying the relationship of correspondence between the description of

the claims and that of the preferred embodiments of the invention, are not to be used for interpreting the technical scope of the invention set forth in the claims.

[0007]

5           An information processing system according to one aspect of the present invention includes an information processing server (2) and a mobile terminal (1-j, where  $j = 1, 2, 3, \dots, n$ ). The information processing server (2) and the mobile terminal (1-j) are connected to a network (3). The information processing server (2) includes server  
10 storage devices (20, 26) where plural objects (4-1 to 4-m) are stored. Each of the plural objects (4-1 to 4-m) includes the unique information (5-1 to 5-m) and the URL (6-1 to 6-m) for accessing to the information processing server (2) for updating.

          The mobile terminal (1-j) sends an install request (30), which  
15 includes an install list (31). In this install list (31), there are stated by the mobile terminal (1-j) the unique information (5-11) and the URL (6-11) of the object among the plural objects (4-1 to 4-m) which is necessary for installation.

          The information processing server (2) refers to the install list  
20 (31) to select, from the objects (4-1 to 4-m) stored in the server storage devices (20, 26), the objects to be transmitted (4-11 to 4-13), to send the selected objects (4-11 to 4-13) (also referred to below as objects of selection (4-11 to 4-13)) to the mobile terminal (1-j).

          Thus, in the information processing system according to the  
25 present invention, the user only has to select the unique information (5-

11) and the URL (6-11) of the needed object (4-11) which is the object actually desired to be used. Thus, in the information processing system according to the present invention, there is no necessity of requesting a download menu (install menu) from the server, using a terminal, as in  
5 the conventional information processing system, so that the user is able to acquire the object promptly.

[0008]

In the information processing system according to the present invention, the mobile terminal (1-j) includes terminal storage devices  
10 (10, 16) having installed therein a group of objects (4-1 to 4-10) among the plural objects (4-1 to 4-m).

The install request (30) further includes an installed list (32), which has therein the unique information (5-1 to 5-10) and the URL (6-1 to 6-10) of the group of objects (4-1 to 4-10) stated by the terminal  
15 storage devices (10, 16).

The information processing server (2) refers to the installed list (32) to form a list (34) of unneeded objects stating the unique information (5-1 to 5-3) and the URL (6-1 to 6-3) of the unneeded objects (4-1 to 4-3), among the objects of the object group (4-1 to 4-10),  
20 which become unnecessary when the selected objects (4-11 to 4-13) have been installed on the terminal storage devices (10, 16). The information processing server (2) sends the list (34) of unneeded objects to the mobile terminal (1-j) along with the selected objects (4-11 to 4-13).

Thus, in the information processing system according to the  
25 present invention, the unneeded objects (4-1 to 4-3), which become

unnecessary when the mobile terminal (1-j) has installed the selected objects (4-11 to 4-13) in the terminal storage devices (10, 16), are deleted. As a consequence, it is unnecessary for the user to search and delete the unneeded objects (4-1 to 4-3), in the information processing system according to the present invention, such that the user is able to use the updated group of objects (4-4 to 4-13), installed (updated) on the terminal storage devices (10, 16), without confusion.

[0009]

The information processing system according to the present invention includes an information processing server (2) and a mobile terminal (1-j), where  $j = 1, 2, 3, \dots, n$ . The information processing server (2) and the mobile terminal (1-j) are connected to the network (3). The information processing server (2) includes a server storage device (20, 26) where plural objects (4-1 to 4-m) are stored. The mobile terminal (1-j) includes terminal storage devices (10, 16) in which objects of the object group (4-1 to 4-10) among the plural objects (4-1 to 4-m) are installed.

The mobile terminal (1-j) sends the install request (30) to the information processing server (2). The install request (30) includes an install list (31) representing a needed object (4-11) among the plural objects that is necessary for installation and an installed list (32) representing the objects of the group of objects (4-1 to 4-10) installed in the terminal storage device (10, 16).

The information processing server (2) refers to the install list (31) to select an object for transmission from the plural objects (4-1 to



4-m) stored in a server storage device (20, 26). The information processing server (2) also refers to the installed list (32) to form a list (34) of unneeded objects, among the objects of the group of objects (4-1 to 4-10). The unneeded objects are objects which become unnecessary  
5 when the selected objects (4-11 to 4-13) have been installed on the terminal storage devices (10, 16). The information processing server sends the selected objects (4-11 to 4-13) and the list of unneeded object (34) to the mobile terminal (1-j).

Thus, in the information processing system according to the  
10 present invention, the unneeded objects (4-1 to 4-3), which become unnecessary when the mobile terminal (1-j) has installed the selected objects (4-11 to 4-13) in the terminal storage device (10, 16), are deleted. As a consequence, in the information processing system according to the present invention, it is unnecessary for the user to search and delete the  
15 unneeded objects (4-1 to 4-3), such that the user is able to use the updated group of objects (4-4 to 4-13), installed (updated) on the terminal storage device (10, 16), without confusion.

[0010]

In the information processing system according to the present  
20 invention, each of the plural objects (4-1 to 4-m) includes the unique information (5-1 to 5-m) and the URL (6-1 to 6-m) for accessing to the information processing server for updating).

The install list (31) has therein the unique information (5-11) and the URL (6-11) of the objects of the object group (4-1 to 4-10) stated by  
25 the mobile terminal (1-j).

The installed list (32) has therein the unique information (5-1 to 5-10) and the URL (6-1 to 6-10) of the group of objects (4-1 to 4-10) stated by the mobile terminal (1-j). The list of unneeded objects (34) has therein the unique information (5-1 to 5-3) and the URL (6-1 to 6-3) of the unneeded objects (4-1 to 4-3) stated by the information processing server (2).

Thus, in the information processing system according to the present invention, the user only has to select the unique information (5-11) and the URL (6-11) of the needed object (4-11), as an object actually desired to be employed, using the mobile terminal (1-j). Thus, in the information processing system according to the present invention, it is unnecessary to request a download menu (install menu), using the terminal, as in the conventional information processing system, such that the object to be used by the user may be acquired promptly.

[0011]

In the information processing system according to the present invention, the mobile terminal (1-j) installs the selected object (4-11 to 4-13) from the information processing server (2) in the terminal storage devices (10, 16). The mobile terminal (1-j) refers to the list of unneeded objects (4-1 to 4-3) from the information processing server (2) to delete the unneeded objects (4-1 to 4-3) from the group of objects (4-1 to 4-10).

The selected objects (4-1 to 4-13) and the objects of the group of objects (4-4 to 4-10), after deletion of the unneeded objects (4-1 to 4-3), are stored by the mobile terminal (1-j) as objects of the updated objects

(4-4 to 4-13) in the terminal storage device (10, 16).

[0012]

In the information processing system according to the present invention, the install request (30) further includes the terminal  
5 identification information (8-j) for discriminating the mobile terminal (1-j). The information processing server (2) forms a list of state of use of the objects (35), responsive to the install request (30), to store the list in the server storage devices (20, 26).

The list of state of use of the objects (35) includes therein the  
10 terminal identification information (8-j), the unique information (5-1 to 5-3) and the URL (6-1 to 6-3) of the unneeded objects (4-1 to 4-3), presently deleted, the unique information (5-4 to 5-10) and the URL (6-4 to 6-10) of the group of objects (4-4 to 4-10), having the unneeded objects (4-1 to 4-3) deleted, and the unique information (5-11 to 5-13)  
15 and the URL (6-11 to 6-13) of presently newly installed selected objects (4-11 to 4-13), stated by the information processing server (2).

Thus, in the information processing system according to the present invention, since the information processing server (2) forms the list of state of use of the objects (35) to store the list in the server  
20 storage device (20 to 26), the updated object group (4-4 to 4-13) installed on the mobile terminal (1-j) may be comprehended by the information processing server (2).

[0013]

In the information processing system according to the present  
25 invention, the mobile terminal (1-j) sends a recovery request (40), as the

install request for restoring the updated group of objects (4-4 to 4-13) installed in the terminal storage device (10, 16) to the group of objects (4-1 to 4-10) when a malfunction occurs in executing the group of the updated objects (4-4 to 4-13) installed in the terminal storage devices  
5 (10, 16).

This recovery request (40) includes a recovery request list (42) has stated therein by the mobile terminal (1-j) the terminal identification information (8-j) and the unique information (5-4 to 5-13) and the URL (6-4 to 6-13) of the updated group of objects (4-4 to 4-13)  
10 installed in the terminal storage devices (10, 16).

The information processing server (2) refers to the recovery request list (42) and the list (35) of state of use of the objects stored in the server storage devices (20, 26) to select from the plural objects (4-1 to 4-m) stored in the server storage device (20, 26) the unneeded objects  
15 (4-1 to 4-3) to be installed by the mobile terminal (1-j) in the terminal storage device (10, 16). The information processing server (2) refers to the recovery request list (42) and the list (35) of state of use of the objects to form a list (44) of unneeded restoration objects, among the objects of the group of objects (4-4 to 4-13), having stated therein the  
20 unique information (5-11 to 5-13) and the URL (6-11 to 6-13) of the selected objects (4-11 to 4-13). The unneeded restoration objects are those objects which become unnecessary when the unneeded objects (4-1 to 4-3) have been installed in the terminal storage devices (10, 16). The information processing server (2) sends the list of unneeded  
25 restoration objects (44) to the mobile terminal (1-j) along with the

unneded objects (4-1 to 4-3).

With the information processing system according to the present invention, the information processing server (2) grasps the updated object group (4-4 to 4-13) installed in the mobile terminal (1-j). Thus, if, in the information processing system according to the present invention, a malfunction has occurred in executing the selected objects (4-11 to 4-13), installed in the terminal storage device (10, 16), that is, if a malfunction has occurred as a result of installing the selected objects (4-11 to 4-13), the updated object group (4-4 to 4-13) installed in the terminal storage device (10, 16) can be restored to the object group (4-1 to 4-10) representing the previous state).

[0014]

With the information processing system according to the present invention, the information processing server (2) refers to the install list (31) to select the needed object (4-11) from the plural objects (4-1 to 4-m) stored in the server storage device (20, 26). The information processing server (2) refers to the installed list (32) to select from the plural objects (4-1 to 4-m) stored in the server storage device (20, 26) link objects (4-12, 4-13) containing the unique information (5-12, 5-13) and the URL (6-12, 6-13), which are linked to the needed object (4-11) and which are not stated in the installed list (32), and sends the needed object (4-11) and the link objects (4-12, 4-13) to the mobile terminal (1-j) as selected objects (4-11 to 4-13).

Thus, with the information processing system according to the present invention, the link objects (4-12, 4-13), linked to the needed

object (4-11), as selected by the user of the mobile terminal (1-j), can be promptly acquired, as an object employed by the user, by the unique information (5-11) and the URL (6-11) of the needed object (4-11).

[0015]

5           With the information processing system according to the present invention, the information processing server (2) forms an install execute sequence (33) for installing the needed object (4-11) and the link objects (4-12, 4-13) in a preset sequence. The information processing server (2) sends the needed object (4-11) and the link objects (4-12, 4-13) in a  
10   preset sequence to the mobile terminal (1-j).

[0016]

          With the information processing system according to the present invention, it may be an occurrence that, during install processing as from transmission of the install request (30, 40) from the mobile  
15   terminal (1-j) to the information processing server (2) until installing the object from the information processing server (2) to the terminal storage devices (10, 16), the communication between the mobile terminal (1-j) and the information processing server (2) is interrupted. In this case, the information processing server (2) discontinues the  
20   install processing in accordance with the install execute sequence (34).

          The communication between the mobile terminal (1-j) and the information processing server (2) then becomes possible. In this case, the mobile terminal sends an installation re-initiating request (35) to the information processing server (2). On receipt of the installation re-  
25   initiating request, the information processing server (2) re-initiates the

discontinued install processing in accordance with the install execute sequence (33).

Thus, with the information processing system according to the present invention, the information processing server (2) sends the  
5 needed object (4-11) and the link objects (4-12, 4-13) in accordance with the preset sequence (33), so that the install processing can be discontinued when the communication between the mobile terminal (1-j) and the information processing server (2) is discontinued and, when the communication between the mobile terminal (1-j) and the information  
10 processing server (2) is possible, the install processing, once interrupted, can be re-initiated in accordance with the install execute sequence (33).  
[0017]

With the information processing system according to the present invention, there are stored in the terminal storage device (10, 16) set-up  
15 program codes (7-4 to 7-13) associated with the objects of the updated object group (4-4 to 4-13), respectively.

In executing each of the objects (4-4 to 4-13) of the updated object group installed in the terminal storage device (10, 16), the mobile terminal converts each updated object (4-4 to 4-13) into a program code  
20 which is the form adapted for executing each updated object on the mobile terminal (1-j). The mobile terminal (1-j) sends to the information processing server (2) a malfunction report (41) representing each updated object, suffering from the malfunction, based on the result of collation between the program code and the set-up program codes (7-  
25 4 to 7-13).

The updated objects, suffering from the malfunction, are assumed to be the selected objects (4-11 to 4-13) installed on the terminal storage devices (10, 16). In this case, the malfunction report (41) represents the objects of selection (4-4 to 4-13). With the information processing system according to the present invention, it is possible to support the development of the objects (4-1 to 4-m) and the set-up program codes (7-1 to 7-m) by the manager of the information processing server (2) based on the malfunction report (41).

[0018]

10 In the information processing system according to the present invention, the set-up program codes (7-1 to 7-m), associated with the plural objects (4-1 to 4-m), are stored in the server storage device (20, 26).

15 When the set-up program codes (7-1 to 7-m), stored in the server storage device (20, 26), are updated to the latest set-up program codes (7-1 to 7-m), the information processing server (2) refers to the list of state of use of the objects (35) to transmit the latest set-up program codes (7-4 to 7-13) associated with the objects (4-4 to 4-13) of the updated object group, among the plural objects (4-1 to 4-m) stored in the server storage devices (20, 26), to the mobile terminal (1-j). The mobile terminal (1-j) updates the set-up program codes (7-4 to 7-13) stored in the terminal storage device to the latest set-up program codes (7-4 to 7-13).

[0019]

25 In the information processing system according to the present



invention, the terminal identification information (8-j) as well as the unique information (5-11 to 5-13) and the URL (6-11 to 6-13) of each of the updated objects (4-11 to 4-13) where the malfunction has occurred are stated by the mobile terminal (1-j) in the malfunction report (41).

- 5 The information processing server (2) stores the malfunction report in the server storage device (20, 26).

[0020]

In the information processing system according to the present invention, the set-up program code (7-1 to 7-m) is a program code where  
10 the malfunction occurs. The mobile terminal (1-j) sends the malfunction report (41) to the information processing server (2) in case of coincidence of the program code and the set-up program code (7-4 to 7-13).

[0021]

- 15 In the information processing system according to the present invention, the malfunction report (41) is contained in the recovery request (40).

[0022]

A mobile terminal (1-j; 1, 2, 3, ..., n) according to the present  
20 invention is connected over a network (3) to an information processing server (2). The information processing server (2) includes a server storage device (20, 26) having stored therein a plurality of objects (4-1 to 4-m). The mobile terminal (1-j) includes a management unit (15) and a communication unit (12, 19).

- 25 The management unit (15) forms an install list (31). Each of the

objects (4-1 to 4-m) includes the unique information (5-1 to 5-m) and the URL (6-1 to 6-m) for accessing the information processing server (2) for updating. The unique information (5-11) and the URL (6-11) of a needed object (4-11) necessary for installation, among the plural objects  
5 (4-1 to 4-m), are stated in the install list (31).

A communication unit (12, 19) transmits an install request (30) including the install list (31) to the information processing server (2). The install request (30) is such information in which the information processing server (2) refers to the install list (31) to select the object for  
10 transmission (4-11 to 4-13) from the plural objects (4-1 to 4-m) stored in the server storage device (20, 26) to transmit the selected objects (4-11 to 4-13) (referred to below as the objects of selection (4-11 to 4-13)) to the communication unit (12, 19).

Thus, with the mobile terminal (1-j) according to the present  
15 invention, it is only sufficient that the user selects the unique information (5-11) and the URL (6-11) of the needed object (4-11), as an object employed by the user, by the user's operation. Thus, with the mobile terminal (1-j) according to the present invention, it is unnecessary to request the download menu (install menu) from the  
20 server, as in the conventional terminal, and hence the user is able to promptly acquire the object he/she uses.

[0023]

The mobile terminal (1-j) according to the present invention further includes a terminal storage device (10, 16) where a group of  
25 objects (4-1 to 4-10) among the plural objects (4-1 to 4-m) have been

installed).

The management unit (15) forms an installed list (32) stating the unique information (5-1 to 5-10) and the URL (6-1 to 6-10) of the group of objects (4-1 to 4-10).

5           The install request (30) further includes the installed list (32).  
The install request (30) is such information in which the information processing server (2) refers to the installed list (32) to form a list of unneeded objects (4-1 to 4-3) having stated therein the unique information (5-1 to 5-3) and the URL (6-1 to 6-3) of unneeded objects  
10 (4-1 to 4-3), that is, objects which becomes unnecessary when the selected object (4-11 to 4-13) among the objects (4-1 to 4-10) of the object group has been installed in the terminal storage device (10, 16), with the list of unneeded objects being transmitted along with the selected object (4-11 to 4-13) to the communication unit (12, 19).

15           Thus, with the mobile terminal (1-j) according to the present invention, the unneeded objects (4-1 to 4-3), which become unnecessary when the selected objects (4-11 to 4-13) are installed in the terminal storage device (10, 16), are deleted. Consequently, with the mobile terminal (1-j) according to the present invention, there is no necessity  
20 for the user to search and delete the unneeded objects (4-1 to 4-3), such that the user is able to use the updated group of objects (4-4 to 4-13) installed (updated) in the terminal storage device (10, 16), without confusion.

[0024]

25           A mobile terminal (1-j; 1, 2, 3, ..., n) according to the present

invention is connected over a network (3) to an information processing server (2). The information processing server (2) includes a server storage device (20, 26) having stored therein a plurality of objects (4-1 to 4-m). The mobile terminal (1-j) includes a terminal storage device (10, 16) where the objects of the object group (4-1 to 4-10) among the plural objects (4-1 to 4-m) have been installed, a management unit (15) and a communication unit (12, 19).

The management unit (15) forms an install list (31) and an installed list (32). The install list (31) denotes a needed object (4-11), that is, an object among plural objects which is necessary for installation. The installed list (32) represents an object group (4-1 to 4-10) installed in the terminal storage device (10, 16).

The communication unit (12, 19) sends an install request (30), including the install list (31) and the installed list (32), to the information processing server (2).

The install request is such information in which the information processing server (2) refers to the install list (31) to select the object for transmission (4-11 to 4-13) from the plural objects (4-1 to 4-m) stored in the server storage device (20, 26). The information processing server (2) further refers to the installed list (32) to form a list of unneeded objects (4-1 to 4-3) representing the objects which become unnecessary when the selected objects (4-11 to 4-13) among the object group (4-1 to 4-10) are installed in the terminal storage device (10, 16), with the selected object (referred to as object of selection 4-11 to 4-13) and the list (34) of unneeded objects being sent to the communication unit (12,

19).

Thus, with the mobile terminal (1-j) according to the present invention, the unneeded objects (4-1 to 4-3), that is, the objects which become unnecessary when the selected objects (4-11 to 4-13) are  
5 installed in the terminal storage device (10, 16), are deleted. Consequently, with the mobile terminal (1-j) according to the present invention, there is no necessity for the user to search and delete the unneeded objects (4-1 to 4-3), such that the user is able to use the updated group of objects (4-4 to 4-13) installed (updated) in the  
10 terminal storage device (10, 16), without confusion.

[0025]

Each of the plural objects (4-1 to 4-m) in the mobile terminal (1-j) according to the present invention includes the unique information (5-1 to 5-m) and the URL (6-1 to 6-m) for accessing the information  
15 processing server (2) for updating;

The unique information (5-11) and the URL (6-11) of the needed object (4-11) are stated by the management unit (15) in the install list (31). The unique information (5-1 to 5-10) and the URL (6-1 to 6-10) of the group of objects (4-1 to 4-10) are stated by the management unit (15)  
20 in the installed list (32). The unique information (5-1 to 5-3) and the URL (6-1 to 6-3) of the unneeded object (4-1 to 4-3) are stated by the information processing server (2) in the list of unneeded objects (34).

Thus, in the mobile terminal (1-j) according to the present invention, the user only has to select the unique information (5-11) and  
25 the URL (6-11) of the needed object (4-11), as an object actually desired

to be employed, by the user's operation. Thus, in the mobile terminal (1-j) according to the present invention, it is unnecessary to request a download menu (install menu) from the server, as in the conventional terminal, such that the object to be used by the user may be acquired promptly).

[0026]

The mobile terminal (1-j) according to the present invention further includes a controller (11). The controller (11) is the OS 11, as explained in the embodiments of the present invention, for installing the selected object (4-11 to 4-13) from the information processing server (2) in the terminal storage device (10, 16). The management unit (15) refers to the list (34) of unneeded object from the information processing server (2) to delete the unneeded object (4-1 to 4-3) from the group of objects (4-1 to 4-10).

The selected object (4-11 to 4-13) and the group of objects (4-4 to 4-10) having the unneeded objects (4-1 to 4-3) deleted are stored by the controller (11) as an updated object group (4-4 to 4-13) in the terminal storage device (10, 16).

[0027]

In the mobile terminal (1-j) according to the present invention, the install request (30) further includes the terminal identification information (8-j) for discriminating the mobile terminal (1-j). The install request (30) is such information in which the information processing server (2) is responsive to the install request to form a list (35) of state of use of the objects for storage in the server storage device

(20, 26).

The list (35) of state of use of the objects has stated therein by the information processing server (2) the terminal identification information (8-j), the unique information (5-1 to 5-3) and the URL (6-1 to 6-3) of the unneeded objects (4-1 to 4-3), presently deleted, the unique information (5-4 to 5-10) and the URL (6-4 to 6-10) of the object group (4-4 to 4-10) having the unneeded objects (4-1 to 4-3) deleted, and the unique information (5-11 to 5-13) and the URL (6-11 to 6-13) of the presently newly installed objects of selection (4-11 to 4-13).

Thus, in the mobile terminal (1-j) according to the present invention, the information processing server (2) forms the list (35) of state of use of the objects for storage in the server storage device (20, 26), so that the updated object group (4-4 to 4-13) installed in the mobile terminal (1-j) can be grasped by the information processing server (2).

[0028]

If, in the mobile terminal (1-j) according to the present invention, a malfunction has occurred in executing each object of the updated object group (4-4 to 4-13), installed in the terminal storage device, the communication unit (12, 19) sends to the information processing server (2) a recovery request (40) which is the install request for restoring the updated object group (4-4 to 4-13) installed in the terminal storage device (10, 16) to the object group (4-1 to 4-10).

The recovery request (40) includes a recovery request list (42), including the terminal identification information (8-j) and the unique

information (5-4 to 5-13) and the URL (6-4 to 6-13) of the updated object group (4-4 to 4-13) installed in the terminal storage device (10, 16), stated by the mobile terminal (1-j). The recovery request (40) is such information in which the information processing server (2) refers  
5 to the recovery request list (42) and the list (35) of state of use of the objects stored in the server storage device (10, 16) to select from the plural objects (4-1 to 4-m) stored in the server storage device (20, 26) the unneeded objects (4-1 to 4-3) to be installed by the controller (11) in the terminal storage device (10, 16), with the information processing  
10 server forming a list (44) of unneeded restoration objects stating the unique information (5-11 to 5-13) and the URL (6-11 to 6-13) of the selected objects (4-11 to 4-13) which become unnecessary when the unneeded objects (4-1 to 4-3) among the objects (4-4 to 4-13) of the updated object group are installed on the terminal storage device (10,  
15 16), with the information processing server sending the list (44) of unneeded restoration objects along with the unneeded object (4-1 to 4-3) to the communication unit (12, 19).

In the mobile terminal (1-j) according to the present invention, described above, the information processing server (2) grasps the  
20 updated object group (4-4 to 4-13) installed in the mobile terminal (1-j). Thus, in the mobile terminal (1-j) according to the present invention, when a malfunction has occurred in executing the selected objects (4-11 to 4-13) installed in the mobile terminal (1-j), that is, if a malfunction has occurred as a result of executing the selected object (4-11 to 4-13),  
25 it is possible to restore the updated object group (4-4 to 4-13) installed



in the terminal storage device (10, 16) to the original state, that is, to the state of the object group (4-1 to 4-10).

[0029]

In the mobile terminal (1-j) according to the present invention,  
5 the install request (30) is such information in which the information processing server (2) refers to the install list (31) to select the needed object (4-11) from the plural objects (4-1 to 4-m) stored in the server storage device (20, 26), and in which the information processing server also refers to the installed list (32) to select from the plural objects (4-  
10 1 to 4-m) stored in the server storage device (20, 26) link objects (4-12, 4-13) which are linked to the needed object (4-11) and which include the unique information (5-12, 5-13) and the URL (6-12, 6-13) not stated in the installed list (32) to send the needed object (4-11) and the link objects (4-12, 4-13) as the selected objects (4-11 to 4-13) to the  
15 communication unit (12, 19).

Thus, in the mobile terminal (1-j) according to the present invention, the link objects (4-12, 4-13) linked to the needed object (4-11) can be promptly acquired, as the objects to be employed by the user, by the unique information (5-11) and the URL (6-11) of the needed  
20 object (4-11) as selected by the user of the mobile terminal (1-j).

[0030]

In the mobile terminal (1-j) according to the present invention, the install request (30) is such information in which the information processing server (2) forms an install execute sequence (33) for  
25 installing the needed object (4-11) and the link objects (4-12, 4-13) in a

preset sequence to send the needed object (4-11) and the link objects (4-12, 4-13) in a preset sequence to the communication unit (12, 19) in accordance with the install execute sequence).

[0031]

5           In the mobile terminal (1-j) according to the present invention, it may be an occurrence that the communication between the communication unit (12, 19) and the information processing server (2) is interrupted during the install processing as from transmission of the install request (30, 40) by the communication unit (12, 19) to the  
10 information processing server (2) until the object from the information processing server (2) is installed by the controller (11) in the terminal storage device (10, 16). In such case, the install processing is discontinued by the information processing server (2) in accordance with the install execute sequence (33).

15           The communication between the communication unit (12, 19) and the information processing server (2) subsequently becomes possible. In this case, the communication unit (12, 19) sends an installation re-initiating request (35) for re-initiating the discontinued install processing to the information processing server (2) in accordance with  
20 the install execute sequence (33).

          Thus, in the mobile terminal (1-j) according to the present invention, in which the information processing server (2) sends the needed object (4-11) and the link objects (4-12, 4-13) in a preset sequence to the mobile terminal (1-j) in accordance with the install  
25 execute sequence (33), the install processing can be discontinued when

the communication between the mobile terminal (1-j) and the information processing server (2) is interrupted, while the install processing, once discontinued, can be re-initiated when the communication between the mobile terminal (1-j) and the information processing server (2) is again possible).

[0032]

The mobile terminal (1-j) according to the present invention further comprises a conversion unit (14) for converting each object of the updated object group (4-4 to 4-13) into a program code, which is a form of using each updated object (4-4 to 4-13) on the mobile terminal (1-j), in executing each object of the updated object group installed on the terminal storage device (10, 16).

In the terminal storage device (10, 16), there is stored the set-up program code (7-4 to 7-13) associated with the updated object group (4-4 to 4-13).

The management unit (15) forms the malfunction group (41), representing each updated object (4-11 to 4-13), where the malfunction has occurred, based on the results of collation between the program code and the set-up program code (7-4 to 7-13).

The communication unit (12, 19) sends the malfunction group (41) to the information processing server (2).

Each updated object, suffering from the malfunction, is e.g. the object of selection (4-11 to 4-13) installed in the terminal storage device (10, 16). In this case, the malfunction report (41) represents the objects of selection (4-11 to 4-13). In the mobile terminal (1-j) of the

present invention, the development of the objects (4-1 to 4-m) and the set-up program codes (7-1 to 7-m) by the manager of the information processing server (2) can be supported based on the malfunction report (41).

5 [0033]

In the mobile terminal (1-j) according to the present invention, set-up program codes (7-1 to 7-m), associated with the plural objects (4-1 to 4-m), are stored in the server storage device (20, 26).

When the set-up program codes (7-1 to 7-m), stored in the server  
10 storage device (20, 26), are updated to the latest set-up program codes (7-1 to 7-m), the information processing server (2) refers to the list of state of use of the objects to transmit the latest set-up program code (7-4 to 7-13) associated with each of the objects of the updated object group (4-4 to 4-13), among the plural objects (4-1 to 4-m) stored in the  
15 server storage device (20, 26), to the mobile terminal (1-j).

The controller (11) updates the set-up program code (7-4 to 7-13) stored in the terminal storage device (10, 16) to the latest set-up program code (7-4 to 7-13).

[0034]

20 In the mobile terminal (1-j) according to the present invention, the terminal identification information (8-j) as well as the unique information (5-11 to 5-13) and the URL (6-11 to 6-13) of each of the updated objects (4-11 to 4-13) where the malfunction has occurred is stated by the management unit (15) in the malfunction report (41). The  
25 information processing server (2) stores the malfunction report (41) in

the server storage device (20, 26).

[0035]

In the mobile terminal (1-j) according to the present invention, the set-up program code (7-1 to 7-m) is a program code where the malfunction occurs. The mobile terminal sends the malfunction report to the information processing server in case of coincidence of the program code and the set-up program code on collation by the management unit (15) of the program code and the set-up program code (7-4 to 7-13).

[0036]

In the mobile terminal (1-j) according to the present invention, the malfunction report (41) is contained in the recovery request (40).

[0037]

An information processing server (2) according to the present invention is connected to a mobile terminal (1-j; 1, 2, 3, ..., n) over a network (3). The information processing server (2) according to the present invention includes a server storage device (20, 26) having stored therein a plurality of objects (4-1 to 4-m), a server communication unit (22, 29) and a server management unit (25). Each of the objects (4-1 to 4-m) includes the unique information (5-1 to 5-m) and the URL (6-1 to 6-m) for accessing to the information processing server for updating;

The server communication unit (22, 29) receives an install request (30) from the mobile terminal (1-j). The install request (30) includes an install list (31) having stated therein the unique information (5-11) and the URL (6-11) of a needed object (4-11), among the plural objects (4-1 to 4-m), that is necessary for installation.

The server management unit (25) refers to the install list (31) for selecting an object (4-11 to 4-13) for transmission from the plural objects (4-1 to 4-m) stored in the server storage device (20, 26).

5 The server communication unit (22, 29) transmits the selected object (4-11 to 4-13) to the mobile terminal (1-j). The selected object (4-11 to 4-13) is sometimes referred to as objects of selection (4-11 to 4-13).

The user of the mobile terminal (1-j) uses the mobile terminal (1-j) to select the unique information (5-11) and the URL (6-11) of the  
10 needed object (4-11), as an object actually employed, using the mobile terminal (1-j). Thus, with the information processing server (2) of the present invention, there is no necessity of sending the download menu (install menu) to the terminal, under a request from the terminal, as in a conventional server, but the object employed by the user is sent by the  
15 unique information (5-11) and the URL (6-11) of the needed object (4-11). Thus, with the information processing server (2) of the present invention, the object to be employed by the user can be acquired promptly.

[0038]

20 In the information processing server (2) according to the present invention, the group of objects (4-1 to 4-m) among the plural objects (4-1 to 4-m) are installed in the terminal storage device (10, 16) of the mobile terminal (1-j).

The install request (30) further includes an installed list (32)  
25 having stated the unique information (5-1 to 5-10) and the URL (6-1 to

6-10) of the object group (4-1 to 4-10).

The server management unit (25) refers to the installed list (32) to form a list of unneeded objects (34) having stated the unique information (5-1 to 5-3) and the URL (6-1 to 6-3) of unneeded objects  
5 (4-1 to 4-3), that is, objects which become unnecessary when the selected objects (4-11 to 4-13) of the group of objects (4-1 to 4-10) are installed in the terminal storage device (10, 16).

The server communication unit (22, 29) transmits the list (34) of unneeded objects along with the selected object (4-11 to 4-13) to the  
10 mobile terminal (1-j).

Thus, in the information processing server (2) of the present invention, the unneeded objects (4-1 to 4-3), that is, the objects which become unnecessary when the selected objects (4-11 to 4-13) are installed by the mobile terminal (1-j) in the terminal storage device (10,  
15 16), are deleted. Thus, with the information processing server (2) of the present invention, there is no necessity for the user to search and delete the unneeded objects (4-1 to 4-3), such that the user is able to use the updated group of objects (4-4 to 4-13) installed (updated) in the terminal storage device (10, 16), without confusion).

20 [0039]

The information processing server (2) according to the present invention is connected to a mobile terminal (1-j; 1, 2, 3, ..., n) over a network (3). The mobile terminal (1-j) includes the terminal storage device (10, 16), in which there are installed a group of objects (4-1 to  
25 4-10) among the plural objects (4-1 to 4-m). The information

processing server (2) according to the present invention includes the server storage device (20, 26), having stored therein the plural objects (4-1 to 4-m), the server communication unit (22, 29) and the server management unit (25).

5       The server communication unit (22, 29) receives an install request (30) from the mobile terminal (1-j). The install request (30) includes an install list (31) and an installed list (32). The install list represents a needed object (4-11) among the plural objects that is necessary for installation and the installed list represents the group of  
10   objects (4-1 to 4-10) installed in the terminal storage device (10, 16).

      The server management unit (25) refers to the install list (31) to select an object for transmission (4-11 to 4-13) from the plural objects (4-1 to 4-m) stored in the server storage device (20, 26). The server management unit (25) also refers to the installed list (32) to form a list  
15   (34) of unneeded objects (4-1 to 4-3), among the objects (4-1 to 4-10) of the group of objects, that is, objects which become unnecessary when the selected objects (4-11 to 4-13) are installed on the terminal storage device (10, 16).

      The server communication unit (22, 29) sends the selected object  
20   (4-11 to 4-13) and the list of unneeded objects (34) to the mobile terminal (1-j).

      Thus, in the information processing server (2) of the present invention, the unneeded objects (4-1 to 4-3), that is, the objects which become unnecessary when the selected objects (4-11 to 4-13) are  
25   installed in the terminal storage device (10, 16), are deleted. Thus, with



the information processing server (2) of the present invention, there is no necessity for the user to search and delete the unneeded objects (4-1 to 4-3), such that the user is able to use the updated group of objects (4-4 to 4-13) installed (updated) in the terminal storage device (10, 16),  
5 without confusion).

[0040]

In the information processing server (2) according to the present invention, each of the plural objects (4-1 to 4-m) includes the unique information (5-1 to 5-m) and the URL (6-1 to 6-m).

10 The install list (31) has stated therein the unique information (5-11) and the URL (6-11) of the needed object (4-11) by the mobile terminal (1-j). The installed list (32) has stated therein the unique information (5-1 to 5-10) and the URL (6-1 to 6-10) of the object group (4-1 to 4-10) by the mobile terminal (1-j). The list of unneeded objects  
15 (34) has stated therein the unique information (5-1 to 5-3) and the URL (6-1 to 6-3) of the unneeded objects (4-1 to 4-3) by the server management unit (25).

The user of the mobile terminal (1-j) uses the mobile terminal (1-j) to select the unique information (5-11) and the URL (6-11) of the  
20 needed object (4-11) which is an object actually desired to be used. Thus, with the information processing server (2) of the present invention, there is no necessity of sending the download menu (install menu) to the terminal, under a request from the terminal, as in a conventional server, but the object employed by the user is sent by the unique information  
25 (5-11) and the URL (6-11) of the needed object (4-11). Thus, with the

information processing server (2) of the present invention, the object to be employed by the user can be acquired promptly.

[0041]

In the information processing server (2) according to the present invention, the selected object (4-11 to 4-13) is installed by the mobile terminal (1-j) in the terminal storage device (10, 16). The mobile terminal refers to the list of unneeded objects so that the unneeded objects (4-11 to 4-13) among the objects (4-4 to 4-10) of the object group are deleted by the mobile terminal (1-j).

The selected object (4-11 to 4-13) and the object group (4-4 to 4-10) having the unneeded object (4-1 to 4-3) deleted are stored in the terminal storage device (10, 16) as an updated object group (4-4 to 4-13).

[0042]

In the information processing server (2) according to the present invention, the install request (30) further includes the terminal identification information (8-j) for discriminating the mobile terminal (1-j).

The server management unit (25) forms a list of state of use of the objects (35), responsive to the install request (30), to store the list in the server storage device (20, 26).

The list of state of use of the objects (35) has stated therein the terminal identification information (8-j), the unique information (5-1 to 5-3) and the URL (6-1 to 6-3) of the unneeded object (4-1 to 4-3), presently deleted, the unique information (5-4 to 5-10) and the URL (6-

4 to 6-10) of the group of objects (4-4 to 4-10), having the unneeded object (4-1 to 4-3) deleted, and the unique information (5-11 to 5-13) and the URL (6-11 to 6-13) of the presently newly installed selected objects (4-11 to 4-13), by the information processing server (2).

5           Thus, in the information processing server (2) according to the present invention, in which the information processing server (2) forms the list of state of use of the objects (35) to store the so formed list in the server storage device (20, 26), so that the updated object group (4-4 to 4-13) installed in the mobile terminal (1-j) can be grasped by the  
10 information processing server (2).

[0043]

          In the information processing server (2) according to the present invention, the server communication unit (22, 29) receives, from the mobile terminal (1-j), a recovery request (40), which is the install  
15 request for restoring the updated object group (4-4 to 4-13) installed in the terminal storage device (10, 16) to the object group (4-1 to 4-10).

          The recovery request (40) is the information sent by the mobile terminal (1-j) when a malfunction has occurred in executing each object of the updated object group (4-4 to 4-13), installed in the terminal  
20 storage device (10, 16), by the mobile terminal (1-j). The recovery request (40) includes a recovery request list (42) having stated therein by the mobile terminal (1-j) the terminal identification information (8-j) and the unique information (5-4 to 5-13) and the URL (6-4 to 6-13) of the updated object group (4-4 to 4-13) installed in the terminal storage  
25 device (10, 16).

The server management unit (25) refers to the recovery request list (42) and the list of state of use of the objects (35), stored in the server storage device (20, 26), to select from the plural objects (4-1 to 4-m) stored in the server storage device (20, 26) the unneeded objects (4-1 to 4-3) to be installed by the mobile terminal (1-j) in the terminal storage device (10, 16). The server management unit (25) forms a list of unneeded restoration objects (44) stating the unique information (5-11 to 5-13) and the URL (6-11 to 6-13) of the selected object (4-11 to 4-13) which become unnecessary when the unneeded object (4-1 to 4-3) among the objects of the updated object group (4-4 to 4-13) are installed on the terminal storage device (10, 16).

The server communication unit (22, 29) sends the list of unneeded objects (44) along with the unneeded objects (4-1 to 4-3) to the mobile terminal (1-j).

In the information processing server (2) according to the present invention, described above, the information processing server (2) comprehends the updated object group (4-4 to 4-13) installed in the mobile terminal (1-u). Thus, if a malfunction has occurred in executing the selected objects (4-11 to 4-13) installed in the terminal storage device (10, 16), that is, if a malfunction has occurred due to installing the objects of selection (4-11 to 4-13), the updated object group (4-4 to 4-13) installed in the terminal storage device (10, 16) can be restored to the original state, that is, to the object group (4-1 to 4-10).

In the information processing server (2) according to the present invention, the server management unit (25) refers to the install list (31) to select the needed object (4-11) from the plural objects (4-1 to 4-m) stored in the server storage device (20, 26). The server management  
5 unit (25) also refers to the installed list (32) to select from the plural objects (4-1 to 4-m) stored in the server storage device (20, 26) the link objects (4-12, 4-13) containing the unique information (5-12, 5-13) and the URL (6-12, 6-13), which link objects are linked to the needed object (4-11) and not stated in the installed list (32).

10 The server communication unit (22, 29) sends the needed object (4-11) and the link object (4-12, 4-13) as the selected object (4-11 to 4-13) to the mobile terminal (1-j).

Thus, in the information processing server (2) according to the present invention, the link object (4-12, 4-13), linked to the needed  
15 object (4-11), selected by the user of the mobile terminal (1-j), may also be promptly acquired as objects used by the user, by the unique information (5-11) and the URL (6-11) of the needed object (4-11) as selected by the user of the mobile terminal (1-j).

[0045]

20 In the information processing server (2) according to the present invention, the server management unit (25) forms an install execute sequence (33) for installing the needed object (4-11) and the link object (4-12, 4-13) in a preset sequence.

In the information processing server (2) according to the present  
25 invention, the server communication unit (22, 29) sends the needed

object (4-11) and the link object (4-12, 4-13) in a preset sequence to the mobile terminal (1-j).

[0046]

In the information processing server (2) according to the present invention, the communication between the mobile terminal (1-j) and the server communication unit (22, 29) is interrupted from time to time during the install processing as from transmission of the install request (30, 40) from the mobile terminal (1-j) to the server communication unit (22, 29) until the object from the server communication unit (22, 29) is installed in the terminal storage device (10, 16). In such case, the server communication unit (22, 29) discontinues the install processing in accordance with the install execute sequence (33).

Subsequently, the communication between the mobile terminal (1-j) and the server communication unit (22, 29) is possible. In such case, the server communication unit (22, 29) receives from the mobile terminal (1-j) an installation re-initiation request (35) for re-initiating the installation processing, once discontinued, in accordance with the install execute sequence (33).

Thus, in the information processing server (2) according to the present invention, in which the needed object (4-11) and the link object (4-12, 4-13) are sent in a preset sequence to the mobile terminal (1-j), in accordance with the install execute sequence (33), the install processing can be discontinued when the communication between the mobile terminal (1-j) and the server communication unit (2) is interrupted, while the install processing, once discontinued, can be re-initiated, in

accordance with the install execute sequence (33), when the communication between the mobile terminal (1-j) and the server communication unit (2) is possible.

[0047]

5           In the information processing server (2) according to the present invention, the terminal storage device (10, 16) has stored therein a set-up program code (7-4 to 7-13) associated with each of the objects of the updated object group (4-4 to 4-13).

10           The server communication unit (22, 29) receives a malfunction report (41) from the mobile terminal (1-j).

15           The malfunction report is the information sent from the mobile terminal (1-j) based on the result of collation between the set-up program code (7-4 to 7-13) and the program code converted by the mobile terminal (1-j) into a form of use on the mobile terminal (1-j) from each updated object (4-4 to 4-13) when each updated object (4-4 to 4-13) of the updated object group installed on the terminal storage device is executed by the mobile terminal (1-j). The malfunction report (41) represents each updated object (4-11 to 4-13) suffering from the malfunction.

20           It is assumed that the objects, where the malfunction has occurred, are the objects of selection (4-11 to 4-13), installed on the terminal storage device (10, 16). The malfunction report (41) is relevant to the objects of selection (4-11 to 4-13). In the information processing server (2) of the present invention, development of the objects (4-1 to 25 4-m) and the set-up program codes (7-1 to 7-m) by the manager of the

information processing server (2) may be supported based on this malfunction report (41).

[0048]

5 In the information processing server (2) according to the present invention, the server storage device (20, 26) has stored therein the set-up program codes (7-1 to 7-m) associated with the plural objects (4-1 to 4-m).

10 When the set-up program codes (7-1 to 7-m) stored in the server storage device is updated to the latest set-up program codes (7-1 to 7-m), the server management unit (25) refers to the list of state of use of the objects (35) to select the latest set-up program code associated with each of the objects of the updated object group (4-4 to 4-13) among the plural objects (4-1 to 4-m) stored in the server storage device (20, 26). The server communication unit (22, 29) sends the latest set-up program  
15 code (7-4 to 7-13) to the mobile terminal (1-j).

The set-up program codes (7-4 to 7-13) stored in the terminal storage device (10, 16) are updated to the latest set-up program codes (7-4 to 7-13).

[0049]

20 In the information processing server (2) according to the present invention, the malfunction report has stated therein the terminal identification information (8-j), the unique information (5-11 to 5-13) and the URL (6-11 to 6-13) of the updated object (4-11 to 4-13) suffering from the malfunction, by the mobile terminal (1-j). The server  
25 management unit (25) stores the malfunction report (41) in the server



storage device (20, 26).

[0050]

In the information processing server (2) according to the present invention, the set-up program codes (7-1 to 7-m) are program codes  
5 where the malfunction occurs. The malfunction report (41) is sent by the mobile terminal (1-j) when the program code coincides with the set-up program code (7-4 to 7-13).

[0051]

In the information processing server (2) according to the present  
10 invention, the malfunction report (41) is included in the recovery request (40).

Still other objects and advantages of the present invention will become readily apparent to those skilled in this art from the following detailed description in conjunction with the accompanying drawings  
15 wherein only the preferred embodiments of the invention are shown and described, simply by way of illustration of the best mode contemplated of carrying out this invention. As will be realized, the invention is capable of other and different embodiments, and its several details are capable of modifications in various obvious respects, all without  
20 departing from the invention. Accordingly, the drawing and description are to be regarded as illustrative in nature, and not as restrictive.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig.1 shows the configuration of an information processing system of the present invention.

25 Fig.2 shows the configuration of a mobile terminal 1-j in the

information processing system according to the present invention.

Fig.3 shows the configuration of an information processing server 2 in the information processing system according to the present invention.

5 Fig.4 shows the information stored in a database 26 of the information processing server 2 in the information processing system according to the present invention.

Fig.5 shows the concept of objects 4-1 to 4-15 of the plural objects 4-1 to 4-1m stored in the database 26 of the information  
10 processing server 2 in the present embodiment).

Fig.6 shows the information stored in the database 16 of the mobile terminal 1-j in the information processing system according to the present invention.

Fig.7 shows the concept of a group of objects 4-1 to 4-10 stored  
15 in the database 16 of the mobile terminal 1-j in an embodiment of present invention.

Fig.8 shows the information stored in a database 17 of the mobile terminal 1-j in the information processing system according to the present invention.

20 Fig.9 shows an install processing as an operation of the information processing system of the present invention.

Fig.10 shows an install list 31 in the information processing system according to the present invention.

Fig.11 shows an installed list 32 in the information processing  
25 system according to the present invention.

Fig.12 shows a list of unneeded restoration objects 34 in the information processing system according to the present invention.

Fig.13 shows an install execute sequence 33 in the information processing system according to the present invention.

5        Fig.14 shows the information stored in the database 16 of the mobile terminal 1-j of present invention.

Fig.15 shows the concept of an updated group of objects 4-4 to 4-13 stored in the database 16 of the mobile terminal 1-j in an embodiment of present invention.

10       Fig.16 shows a list indicating the state of use of the objects 35 in the information processing system according to the present invention.

Fig.17 shows the processing of updating a set-up program code as the operation of the information processing system of the present invention.

15       Fig.18 shows the interruption processing and the install re-initiating processing as operation of the information processing system of the present invention.

Fig.19 shows the object execution processing and the restoration processing as operation of the information processing system of the present invention.

20

Fig.20 shows the restoration processing, shown in Fig.19, as the operation of the information processing system of the present invention.

Fig.21 shows a malfunction report 41 of the information processing system of the present invention.

25       Fig.22 shows a recovery request list 42 of the information

processing system of the present invention.

Fig.23 shows a list of unneeded restoration objects 44 of the information processing system of the present invention.

Fig.24 shows an install execute sequence 43 of the information  
5 processing system of the present invention.

Fig.25 shows a list of state of use of the objects 45 of the information processing system of the present invention.

Fig.26 shows interruption processing and installation re-  
initiating processing, performed during the restoration processing, as  
10 operation of the information processing system of the present invention.

#### PREFERRED EMBODIMENTS OF THE INVENTION

[0052]

Referring to the drawings, preferred embodiments of the present invention are now described. Fig.1 depicts the configuration of an  
15 information processing system according to an embodiment of the present invention. Referring to Fig.1, the information processing system according to an embodiment of the present invention includes mobile terminals 1-1 to 1-n, where n is an integer not less than 1, and an information processing server 2. As the mobile-terminal 1-j, a mobile  
20 phone or a PDA (personal digital assistant) may be adopted. The mobile terminal 1-j, where  $j = 1, 2, 3, \dots, n$ , and the information processing server 2, are connected to a network 3.

The mobile terminal 1-j transmits an install request, which is later described, as the information for installing the object as needed by  
25 the user of the mobile terminal 1-j (computer programs, and/or

information) over the network 3 to the information processing server 2. This information processing server 2 is responsive to the install request, as later explained, to transmit the object as needed by the user and the relevant information, as later explained, over the network 3 to the  
5 mobile terminal 1-j.

[0053]

Fig.2 shows the configuration of the mobile terminal 1-j. The mobile terminal 1-j includes a computer 18. To this computer 18 are connected a communication device 19, an input device, not shown, and a  
10 display device, also not shown. The computer 18 includes a hard disc 10, as a memory device for the mobile terminal 1-j.

In the hard disc 10, there are stored an operating system (OS) 11, a database 16 and a database 17, as a platform environment in the mobile terminal 1-j. In the database 16, a set of objects, as later explained,  
15 among the plural objects, as later explained, are installed (stored). Each of the plural objects includes the unique information (version and magic numbers), and the URL (Uniform Resource Locator) as an address with which the mobile terminal 1-j accesses the information processing server 2 for updating. In the database 16, there is stored a program  
20 pattern (set-up program code) associated with each of the objects of the object group. The set-up program code is a program code in which, when each of the objects of the object group installed in the database 16 is executed, a malfunction occurs. In the database 17, there is stored the terminal identification information 8-j for discriminating the mobile  
25 terminal 1-j.

In the hard disc 10, there are additionally stored a communication module 12, as the software (computer program), a mobile terminal module 13, a conversion module 14 and a management module 15. The communication module 12, mobile terminal module 13, conversion  
5 module 14 and the management module 15 are resident at all times in the OS 11 and automatically run by the OS 11.

[0054]

The communication module 12 has the communication functions employing the HTTP (Hyper Text Transfer Protocol), TCP/IP  
10 (Transmission Control Protocol/Internet Protocol), Bluetooth and infrared rays. One of the transmission protocols employing the HTTP, TCP/IP, Bluetooth and infrared rays, is selected by the user acting on an input device of the mobile terminal 1-j. Based on the communication function, thus selected, the communication module 12 controls the  
15 communication device 19 so that exchange of the information for installing the object as needed by the user will take place between the mobile terminal and the information processing server 2.

[0055]

The mobile terminal module 13 performs usual operations of a  
20 mobile phone or the PDA. In case the mobile terminal 1-j is a mobile phone, the usual operation is the operations of call or exchange of E-mails with the mobile terminals 1-2 to 1-m. The mobile terminal module 13 of the mobile terminal 1-j, which in this case is the mobile phone 1-1, controls the communication device 19 so that call and exchange of  
25 E-mails will take place between the mobile terminal 1-j and the mobile

terminals 1-2 to 1-m).

[0056]

In executing each of the objects of the group of objects, installed on the hard disc 10 (database 16), the conversion module 14 converts  
5 each object into a program that may be run on the mobile terminal 1-j (program code).

The management module 15 manages the group of the objects, installed on the hard disc 10 (database 16), and comprehends the state of storage of the object group. When the program code converted by the  
10 conversion module 14 and the set-up program code stored in the database 16 (program code in which a malfunction may occur) are not coincident with each other, the management module 15 executes each object.

The plural objects are programs written in a programming  
15 language that may be converted by the conversion module 14, as described above. Since the plural objects are converted by the conversion module 14 into a program adapted to the platform, the objects can be run in an environment provided with the conversion module 14 without dependency on the platform.

20 [0057]

Fig.3 shows the configuration of the information processing server 2. This information processing server 2 includes a computer 28. To this computer 28 are connected a communication device 29, an input device, not shown, and a display device, also not shown. The computer  
25 18 includes a hard disc 20, as a memory device for the information

processing server 2).

In the hard disc 20, there are stored an operating system (OS) 21, a database 26 and a database 27, as a platform environment in the information processing server 2. In the database 26, plural objects, as  
5 later explained, are stored. In the database 26, a program pattern, associated with each of plural objects (set-up program code), is stored. In the database 27, there is stored a list of the state of use of the objects, stored in the hard disc 10 of the mobile terminal 1-j, as later explained.

In the hard disc 20, there are further stored a server  
10 communication controller 22 and a server management unit 25, which are software (computer programs). The server communication controller 22 and a server management unit 25 are resident at all times in the OS 21 and automatically executed by the OS 21.

[0058]

15 The server communication controller 22 has the communication function employing HTTP, TCP/IP, Bluetooth or infrared rays. The server communication controller 22 controls the communication device 29 so that information exchange will be executed between the server 2 and the mobile terminal 1-j in keeping with the communication function  
20 as selected by the user (mobile terminal 1-j). The server management unit 25 supervises the plural objects stored in the hard disc 20 (database 26) to comprehend the state of storage of the plural objects.

[0059]

Fig.4 shows the information stored in the database 26 of the  
25 information processing server 2. In the database 26, there are stored,



as the aforementioned plural objects, the objects 4-1 to 4-m, where m is an integer not less than 1. The objects 4-1 to 4-m include, as the aforementioned unique information and the aforementioned URL, the unique information 5-1 to 5-m and the URL 6-1 to 6-m. In the database  
 5 26, there are additionally stored, as the aforementioned set-up program code, set-up program codes 7-1 to 7-m, which are associated with the objects 4-1 to 4-m, respectively.

[0060]

Fig.5 shows the concept of objects 4-1 to 4-15, among the plural  
 10 objects (objects 4-1 to 4-m) stored in the hard disc 20 of the information processing server 2 (database 26). Of the objects 4-1 to 4-15, stored in the database 26, the objects 4-2 and 4-3 are linked to the object 4-1, the object 4-5 is linked to the object 4-4, the object 4-6 is linked to the object 4-5, the objects 4-9 and 4-10 are linked to the object 4-8, the  
 15 objects 4-12 and 4-13 are linked to the object 4-11 and the object 4-15 is linked to the object 4-11.

[0061]

Fig.6 shows the information stored in the database 16 of the mobile terminal 1-j. It is assumed that, in the database 16, there are  
 20 already installed (stored) the objects 4-1 to 4-10, as the aforementioned objects of the group of objects, among the objects 4-1 to 4-m. As aforesaid, the objects 4-1 to 4-10 include the unique information 5-1 to 5-10 and URL 6-1 to 6-10, while there are further stored in the database 16 the set-up program codes 7-1 to 7-10 associated with the objects 4-1  
 25 to 4-10.

[0062]

Fig.7 shows the concept of the sets of objects (objects 4-1 to 4-10) stored in the hard disc 10 of the mobile terminal 1-j (database 16). Of the objects 4-1 to 4-10, the objects 4-2 and 4-3 are linked to the object 4-1, the object 4-5 is linked to the object 4-4, the object 4-6 is linked to the object 4-5, and the objects 4-9 and 4-10 are linked to the object 4-8, as in the case of the objects 4-1 to 4-10 among the objects 4-1 to 4-m stored in the database 16.

[0063]

Fig.8 shows the information stored in the database 17 of the mobile terminal 1-j. In the database 17, there are stored, in addition to the terminal identification information 8-j, the unique information 5-1 to 5-m and the URL 6-1 to 6-m, in a relationship of correspondence, for selecting the objects, among the plural objects 4-1 to 4-m, as needed in installation. In the database 17, there is further stored the installation information, associated with the unique information 5-1 to 5-m and the URL 6-1 to 6-m, for indicating whether or not the objects have been installed. In the present embodiment, the information of the state of installation, that is 'installed', is stored in the database 17, in association with the unique information 5-1 to 5-10 and the URL 6-1 to 6-10.

When an object is added by a manager of the information processing server 2, the unique information 5-1 to 5-m and the URL 6-1 to 6-m, stored in the database 17, are updated to the latest unique information 5-1 to 5-m and the URL 6-1 to 6-m (in this case,  $m = m+1$ ),

by the information processing server 2. In this case, the server communication controller 22 of the information processing server 2 controls the communication device 29 so that the latest unique information 5-1 to 5-m and the URL 6-1 to 6-m will be sent to the mobile terminal 1-j. The OS 11 of the mobile terminal 1-j updates the unique information 5-1 to 5-m and the URL 6-1 to 6-m, stored in the hard disc 10 (database 17) to the latest unique information 5-1 to 5-m and URL 6-1 to 6-m.

[0064]

10 The operation of the information processing system of the present invention is now explained. The operation of the information processing system of the present invention encompasses the install processing, processing of updating the set-up program code, the processing of object execution and the recovery processing. The install processing and the recovery processing are carried out by the software of the mobile terminal 1-j and the information processing server 2 (computer program).

[0065]

20 The install processing is the processing as from transmission of the install request to the mobile terminal 1-j to the information processing server 2 until installing the object from the information processing server 2 to the hard disc 10 of the mobile terminal 1-j.

25 The processing of updating the set-up program code is the processing of updating the set-up program code (7-1 to 7-10) stored in the hard disc 10 to the latest set-up program code 7-1 to 7-10, by push

distribution from the information processing server 2 (automatic transmission of the latest set-up program code from the information processing server 2) when the set-up program codes 7-1 to 7-10 stored in the hard disc 20 have been updated to the latest set-up program code 7-1 to 7-10.

The processing of object execution is the execution by the mobile terminal 1-j of each of the objects of the object group, installed on the hard disc 10 by the install processing (updated object group).

The recovery processing is the processing of restoring the updated object group, installed on the hard disc 10, to the former object group (objects 4-1 to 4-10) if malfunction has occurred in executing each of the objects of the object group installed on the hard disc 10 by the install processing (updated object group).

[0066]

The computer program, responsible for the install processing and the recovery processing, includes a subroutine program for performing the installation re-initiation processing. If, during the install processing (recovery processing), the communication between the mobile terminal 1-j and the information processing server 2 has come to a close, the information processing server 2 discontinues the install processing (recovery processing). The installation re-initiation processing means the processing in which, in case the communication between the mobile terminal 1-j and the information processing server 2 is possible during the time of interruption of the install processing (recovery processing), the mobile terminal 1-j sends an installation re-initiation request, as

later explained, to the information processing server 2, which information processing server 2 then is responsive to the installation re-initiation request to re-initiate the install processing (recovery processing).

5 [0067]

Fig.9 shows the install processing, as an operation of the information processing system of the present invention.

[0068]

The management module 15 of the mobile terminal 1-j controls  
10 the display of the mobile terminal 1-j, by the operation of the input device of the mobile terminal 1-j by the user, so that the information stored in the database 17 of the mobile terminal 1-j (unique information 5-1 to 5-m, URL 6-1 to 6-m and the information on the installed state) will be displayed thereon. The user refers to the information displayed  
15 on the display device to select the unique information 5-11 and the URL 6-11 of the object 4-11 of the plural objects 4-1 to 4-11 which is necessary for installation (step S1).

When the unique information 5-11 and the URL 6-11 of the object 4-11 as needed have been selected in the step S1, the management  
20 module 15 forms an install list 31 shown in Fig.10. The install list 31 represents the needed object 4-11, which has been selected by the user. In this install list 31, the terminal identification information 8-j, as well as the unique information 5-11 and the URL 6-11 of the necessary object 4-11, is stated by the management module 15.

25 The user acts on the input device of the mobile terminal 1-j, on selection

of the object 4-11 as needed in the step S1, to select one of the communication functions employing the HTTP, TCP/IP, Bluetooth and the infrared rays.

[0069]

- 5           The management module 15 of the mobile terminal 1-j retrieves the objects 4-1 to 4-10, installed on the hard disc 10 (database 16) (step S2).

On retrieval of the object group of the objects 4-1 to 4-10 in the step S2, the management module 15 forms an installed list 32 shown in  
10 Fig.11. The installed list 32 represents the object group of the objects 4-1 to 4-10 as installed on the hard disc 10 (database 16). This installed list 32 includes the unique information 5-1 to 5-10 and the URL 6-1 to 6-10, as stated by the management module 15).

[0070]

- 15           The management module 15 of the mobile terminal 1-j forms an install request 30, including the install list 31 and the installed list 32 (step S3). The communication module 12 of the mobile terminal 1-j controls the communication device 19, so that the install request 30 will be sent to the information processing server 2, based on the  
20 communication function as selected by the user (step S4).

[0071]

The server communication controller 22 of the information processing server 2 comprehends the communication function, as selected by the user on receipt of the install request 30 from the mobile  
25 terminal 1-j. The server management unit 25 is responsive to the

install request 30 to select an object to be sent to the mobile terminal 1-j (object of selection as later explained) and an unneeded object (unneeded object as later explained), from among the plural objects 4-1 to 4-m stored in the hard disc 20 (database 26) (step S5).

5 [0072]

The selection of the object to be transmitted in the step S5 is now explained.

The server management unit 25 of the information processing server 2 refers to the install list 31, included in the install request 30, to  
10 select the needed object 4-11, as the object of selection, from the plural objects 4-1 to 4-m stored in the hard disc 20 (database 26). Simultaneously, the server management unit 25 also selects the set-up program code 7-11, associated with the object of selection 4-11, from the plural set-up program codes 7-1 to 7-m, stored in the database 26.

15 The server management unit 25 refers to the installed list 32 in the install request 30 to select, from the plural objects 4-1 to 4-m, stored in the hard disc 20 (database 26), the link objects 4-12 and 4-13, linked to the needed object 4-11 and not stated in the installed list 32, as the objects of selection. Simultaneously, the server management unit 25  
20 also selects the set-up program codes 7-12 and 7-13, associated with the objects of selection 4-12 and 4-13, from the plural set-up program codes 7-1 to 7-m stored in the database 26.

[0073]

The selection of the unneeded object in the step S5 is now  
25 explained.

The server management unit 25 of the information processing server 2 refers to the installed list 32 in the install request 30 to form an unneeded object list 34 shown in Fig.12. This unneeded object list 34 denotes unneeded objects 4-1 to 4-3 which, when the objects of selection 4-11 to 4-13 of the objects 4-1 to 4-10 of the object group are installed on the hard disc 10 (database 16), become unnecessary. In the unneeded object list 34, the terminal identification information 8-j, the unique information 5-1 to 5-3 and the URL 6-1 to 6-3, are stated by the server management unit 25.

10 [0074]

The server management unit 25 of the information processing server 2 forms install patch data for compressing the objects of selection 4-11 to 4-13 for enabling the installation (step S6).

When the install patch data are prepared in the step S6, the server management unit 25 forms an install execute sequence 33 for the mobile terminal 1-j to install the objects of selection 4-11 to 4-13 in a preset sequence, as shown in Fig.13. In the install execute sequence 33, the terminal identification information 8-j, the aforementioned preset sequence "1", "2" and "3", the unique information 5-11 to 5-13 and the URL 6-11 to 6-13 of the objects of selection 4-11 to 4-13 are stated by the server management unit 25. The preset sequence "1", "2" and "3" means that the objects of selection 4-11, 4-12 and 4-13 are installed in the sequence of "1", "2" and "3". If, when the server management unit 25 has formed the install execute sequence 33, the install processing is discontinued when the objects of selection 4-11, 4-12 and 4-13 are being



sent in the sequence of "1", "2" and "3", as when the object of selection 4-12 is being sent to the mobile terminal 1-j, the server communication controller 22 may refer to the install execute sequence 33 to re-initiate the interrupted install processing (transmission of the object of selection 4-12 may again be tried).

[0075]

The server communication controller 22 of the information processing server 2 controls the communication device 29, in accordance with the install execute sequence 33, so that the object of selection 4-11 will be sent to the mobile terminal 1-j by the communication function as selected by the user (step S7). Simultaneously, the server communication controller 22 controls the communication device 29 so that the set-up program code 7-11 will be sent to the mobile terminal 1-j by the communication function as selected by the user.

The OS 11 of the mobile terminal 1-j installs the object of selection 4-11 from the information processing server 2 on the hard disc 10 (database 16) (step S8). Simultaneously, the OS 11 installs the set-up program code 7-11 from the information processing server 2 on the hard disc 10 (database 16) in association with the object of selection 4-11.

When the OS 11 has installed the object of selection 4-11, the communication module 12 of the mobile terminal 1-j sends a notification of confirmation of install completion 36 to the information processing server 2 for indicating that installation of the object of selection 4-11 has been finished (step S9).

[0076]

On receipt of the notification of confirmation of install completion 36 by the server communication controller 22 of the information processing server 2 from the mobile terminal 1-j, there are  
5 the objects of selection 4-12 and 4-13 not as yet sent to the mobile terminal 1-j (step S-10-yes). Thus, the server communication controller 22 of the information processing server 2 in a step S7 controls the communication device 19 so that the object of selection 4-12 will be transmitted to the mobile terminal 1-j by the communication function as  
10 selected by the user. Simultaneously, the server communication controller 22 controls the communication device 29 so that the set-up program code 7-12 will be transmitted to the mobile terminal 1-j by the communication function as selected by the user.

In the step S8, the OS 11 of the mobile terminal 1-j installs the  
15 object of selection 4-12 from the information processing server 2 in the hard disc 10 (database 16). Simultaneously, the OS 11 installs the set-up program code 7-12 from the information processing server 2 in the hard disc 10 (database 16) in association with the object of selection 4-12..

20 When the OS 11 has installed the object of selection 4-12, the communication module 12 of the mobile terminal 1-j in a step S9 sends the notification of confirmation of install completion 36, indicating the fact of the installation of the object of selection, to the information processing server 2, by the communication function as selected by the  
25 user.

[0077]

On receipt by the server communication controller 22 of the information processing server 2 of the notification of confirmation of install completion 36 from the mobile terminal 1-j, there is as yet the object of selection 4-13 not as yet sent to the mobile terminal 1-j (step S-10-yes). Thus, the server communication controller 22 of the information processing server 2 in a step S7 controls the communication device 29 so that the object of selection 4-13 will be transmitted to the mobile terminal 1-j by the communication function as selected by the user. Simultaneously, the server communication controller 22 controls the communication device 29 so that the set-up program code 7-13 will be transmitted to the mobile terminal 1-j by the communication function as selected by the user.

In the step S8, the OS 11 of the mobile terminal 1-j installs the object of selection 4-13 from the information processing server 2 in the hard disc 10 (database 16). Simultaneously, the OS 11 installs the set-up program code 7-13 from the information processing server 2 in the hard disc 10 (database 16) in association with the object of selection 4-13.

When the OS 11 has installed the object of selection 4-13, the communication module 12 of the mobile terminal 1-j in a step S9 sends the notification of confirmation of install completion 36, indicating the fact of the installation of the object of selection 4-13, to the information processing server 2, by the communication function as selected by the user.

[0078]

On receipt by the server communication controller 22 of the information processing server 2 of the notification of confirmation of install completion 36 from the mobile terminal 1-j, there is no object of selection 4-13 not as yet sent to the mobile terminal 1-j (step S-10-no). Thus, the server communication controller 22 of the information processing server 2 controls the communication device 29 so that the unneeded object list 34 will be transmitted to the mobile terminal 1-j, by the communication function as selected by the user (step S11).

10 The OS 11 of the mobile terminal 1-j refers to the unneeded object list 34 from the information processing server 2 to delete the unneeded objects 4-1 to 4-3 of the group of the objects 4-1 to 4-10 installed on the hard disc 10 (database 16) (step S12). Simultaneously, the OS 11 deletes the set-up program codes 7-1 to 7-3, stored in the database 16 in association with the unneeded objects 4-1 to 4-3. The OS 11 stores the information on the installed state "installed" in the database 17 in association with the unique information 5-4 to 5-13 and the URL 6-4 to 6-13.

[0079]

20 In the steps S8 and S12, the objects of selection 4-11 to 4-13 and the group of the objects 4-4 to 4-10, having the unneeded objects 4-1 to 4-3 deleted, are stored by the OS 11 in the hard disc 10 (database 16) as the updated group of the objects 4-4 to 4-13 shown in Fig.14. Referring to Fig.14, the updated group of the objects 4-4 to 4-13 installed in the database 16 includes the unique information 5-4 to 5-13

25

and the URL 6-4 to 6-13. In the database 16, the set-up program codes 7-4 to 7-13 are stored in association with the objects 4-4 to 4-13.

As for the objects 4-4 to 4-13 stored in the database 16, shown in Fig.15, the object 4-5 is linked to the object 4-4, the object 4-6 is linked to the object 4-5, the objects 4-9 and 4-10 are linked to the object 4-8, the objects 4-12 and 4-13 are linked to the object 4-11 and the object 4-15 is linked to the object 4-11, as the objects 4-4 to 4-13 of the objects 4-1 to 4-m stored in the database 26).

[0080]

10 When the OS 11 of the mobile terminal 1-j has deleted the unneeded objects 4-1 to 4-3, the communication module 12 of the mobile terminal 1-j sends a notification of confirmation of the end of deletion 37, indicating the fact of deletion of the unneeded objects 4-1 to 4-3, to the information processing server 2, by the communication function as  
15 selected by the user (step S13).

[0081]

On receipt of the notification of confirmation of the end of deletion 37, the server communication controller 22 of the information processing server 2 forms a list indicating the state of use of the objects  
20 35. The OS 22 stores the list indicating the state of use of the objects 35 in the hard disc 20 (database 26) (step S14).

In the list indicating the state of use of the objects 35, the terminal identification information 8-j and the unique information 5-1 to 5-3 as well as the URL 6-1 to 6-3 of the unneeded objects 4-1 to 4-3,  
25 now deleted, are stated by the server management unit 25. As the latest

information, the unique information 5-4 to 5-10 of the group of objects 4-4 to 4-10, having the unneeded objects 4-1 to 4-3 deleted, and the URL 6-4 to 6-10, and the unique information 5-11 to 5-13 of the group of objects 4-11 to 4-13, newly installed, and the URL 6-11 to 6-13, are  
5 stated by the server management unit 25.

[0082]

In the install processing of the information processing system of the present invention, the user only has to select the unique information 5-11 and the URL 6-11 of the needed object 4-11, as an object actually  
10 desired to be employed, using the mobile terminal 1-j. Thus, in the information processing system according to the present invention, it is unnecessary to use the terminal to request a download menu (install menu) using the terminal as in the conventional information processing system, such that the object to be used by the user may be acquired  
15 promptly.

In the install processing of the information processing system according to the embodiment of the present invention, the link objects 4-12 and 4-13, to be linked to the needed object 4-11, as selected by the user of the mobile terminal 1-j, may also be promptly acquired as an  
20 object to be used by the user, based on the unique information 5-11 and the URL 6-11 of the needed object 4-11, as selected by the user of the mobile terminal 1-j).

In the install processing of the information processing system according to the embodiment of the present invention, the mobile  
25 terminal 1-j deletes the objects 4-1 to 4-3, which become unnecessary

when the mobile terminal 1-j has installed the selected objects 4-11 to 4-13 in the hard disc 10 (database 16). Thus, in the information processing system according to the present invention, there is no necessity for the user to search and delete the unneeded objects 4-1 to 4-3, such that the user is able to use the updated group of objects 4-4 to 4-13 installed (updated) in the hard disc 10 (database 16), without confusion).

In the install processing of the information processing system according to the embodiment of the present invention, the information processing server 2 forms the list indicating the state of use of the objects 35 for storage in the hard disc 20 (database 26), so that the information processing server 2 is able to comprehend the updated group of objects 4-4 to 4-13 installed in the mobile terminal 1-j.

[0083]

Fig.17 shows the set-up program code update processing, as an operation of the information processing system according to the embodiment of the present invention.

[0084]

The set-up program codes (7-1 to 7-m), stored in the hard disc 20 (database 26), are updated to the latest set-up program codes (7-1 to 7-m) by the manager of the information processing server 2 acting on the input device of the information processing server 2 (step S21-yes). At this time, the server management unit 25 of the information processing server 2 refers to the list indicating the state of use of the objects 35 to select the latest set-up program codes (7-4 to 7-13) associated with the

group of the updated objects 4-4 to 4-13 of the plural objects 4-1 to 4-m stored in the hard disc 20 (database 26) (step S22).

The server communication controller 22 of the information processing server 2 controls the communication device 29 so that the latest set-up program codes (7-4 to 7-13) will be transmitted to the mobile terminal 1-j by the communication function previously selected by the user (step S23).

The OS 11 of the mobile terminal 1-j updates the set-up program codes (7-4 to 7-13), stored in the hard disc 10 (database 16), to the latest set-up program codes (7-4 to 7-13) (step S24).

[0085]

Fig.18 shows the interruption processing and the install re-initiation processing, carried out during the install processing, as the operation of the information processing system according to the embodiment of the present invention.

[0086]

When the power supply of the mobile terminal 1-j is discontinued, or the mobile terminal 1-j has moved to outside the sphere of communication, the communication between the mobile terminal 1-j and the information processing server 2 is discontinued. If the communication between the mobile terminal 1-j and the information processing server 2 is discontinued and the install processing has as yet not come to a close, the server communication controller 22 of the information processing server 2 controls the communication device 29 so that the install processing will be discontinued (that is, so that the



processing of interruption will be carried out) in accordance with the install execute sequence 33 (step S30).

The communication between the mobile terminal 1-j and the information processing server 2 then becomes possible (step S31-yes).

5 Since the install processing has as yet not come to a close in this case (step S32-no), the communication module 12 of the mobile terminal 1-j controls the communication device 19 so that the list indicating the state of use of the objects 35 will be transmitted to the information processing server 2 by the communication function as selected by the user (step  
10 S33).

On receipt of the install re-initiation request, the server communication controller 22 of the information processing server 2 controls the communication device 29 so that the install processing, once discontinued, will be re-initiated in accordance with the install  
15 execute sequence 33 (step S34).

[0087]

Thus, in the install processing by the information processing system according to the embodiment of the present invention, in which the information processing server 2 sends the objects of selection 4-11  
20 to 4-13, that is, the necessary object 4-11 and the link objects 4-12 and 4-13, to the mobile terminal 1-j in a preset sequence, in accordance with the install execute sequence 33, the install processing may be interrupted on interruption of the communication between the mobile terminal 1-j and the information processing server 2, while the install  
25 processing, thus interrupted, may be re-initiated, in accordance with the

install execute sequence 33, when the communication between the mobile terminal 1-j and the information processing server 2 becomes possible.

[0088]

5            Fig.19 shows the object executing processing and the restoration processing, as the operation of the information processing system according to the embodiment of the present invention.

[0089]

When executing the updated objects 4-4 to 4-13 installed on the  
10    hard disc 10 (database 16), the conversion module 14 of the mobile terminal 1-j converts the updated objects 4-4 to 4-13 into program codes as the forms of using the objects on the mobile terminal 1-j (step S41). It is now assumed that the objects to be executed are the aforementioned objects of selection 4-11 to 4-13. In the step S41, the conversion module  
15    14 converts the objects of selection 4-11 to 4-13 to the program codes of the form for use on the mobile terminal 1-j. The management module 15 collates the program code S , converted for using the objects of selection 4-11 to 4-13, to the set-up program codes 7-11 to 7-13 (step S42).

20    [0090]

In case of non-coincidence of the program code S e and the set-up program codes 7-11 to 7-13 (step S42-no), the management module 15 of the mobile terminal 1-j recognizes that no malfunction occurs in executing the objects of selection 4-11 to 4-13 installed on the database  
25    16, and performs object executing processing for executing the objects

of selection 4-11 to 4-13 (step S43).

[0091]

In case of coincidence of the program codes and the set-up program codes 7-11 to 7-13 (step S42-yes), there occurs the malfunction  
5 in executing the objects of selection 4-11 to 4-13 installed on the database 16. Thus, the management module 15 of the mobile terminal 1-j forms a malfunction report 41 shown in Fig.21 (step S44) to proceed to the restoration processing (step S45). The malfunction report 41 represents the objects of selection 4-11 to 4-13 where the malfunction  
10 has occurred. In the malfunction report 41, the terminal identification information 8-j and the unique information 5-11 to 5-13 as well as the URL 6-11 to 6-13 of the objects of selection 4-11 to 4-13 where the malfunction has occurred, are stated by the management module 15.

[0092]

15 Fig.20 shows the restoration processing, as the operation of the information processing system according to the embodiment of the present invention, shown in Fig.19.

[0093]

On transfer to the restoration processing, the management module  
20 15 of the mobile terminal 1-j controls the display of the mobile terminal 1-j such as to display the malfunction report 41, in order to advise the user of the objects of selection 4-11 to 4-13 where the malfunction has occurred (step S51).

When the malfunction report 41 is displayed in the step S51, the  
25 user actuates the input device of the mobile terminal 1-j to select one of

the communication functions employing the HTTP, TCP/IP, Bluetooth and the infrared rays.

[0094]

5 The management module 15 of the mobile terminal 1-j then retrieves the updated group of the objects 4-4 to 4-13 installed on the hard disc 10 (database 16) (step S52).

On retrieval of the updated group of the objects 4-4 to 4-13 in the step S52, the management module 15 forms a recovery request list 42 shown in Fig.22. The recovery request list 42 represents the updated  
10 group of the objects 4-4 to 4-13 installed on the hard disc 10 (database 16). In this recovery request list 42, the terminal identification information 8-j and the unique information 5-4 to 5-13 as well as the URL 6-4 to 6-13 of the object group 4-4 to 4-13 are stated in the management module 15.

15 [0095]

The management module 15 of the mobile terminal 1-j then forms a recovery request 40 including the malfunction report 41 and the recovery request list 42 (step S53). The communication module 12 of the mobile terminal 1-j controls the communication device 19 such as to  
20 transmit the recovery request 40 to the information processing server 2 by the communication function as selected by the user (step S54). The recovery request 40 is an install request for restoring the updated group of the objects 4-4 to 4-13, installed on the hard disc 10 (database 16), into the group of the objects 4-1 to 4-10.

25 [0096]

On receipt of the recovery request 40 from the mobile terminal 1-j, the server communication controller 22 of the information processing server 2 comprehends the communication function selected by the user, such that its OS 22 causes the malfunction report 41  
5 contained in the recovery request 40 to be stored in the hard disc 20 (data base 26). By a developer for the information processing server 2 actuating the input device of the information processing server 2, the server management unit 25 of the information processing server 2 demonstrates the malfunction report 41 stored in the database 26 on the  
10 display of the information processing server 2. Thus, the manager is able to develop the object and the set-up program code based on this malfunction report 41.

[0097]

The server management unit 25 of the information processing  
15 server 2 is responsive to the recovery request 40 to select an object to be sent to the mobile terminal 1-j (unneeded object) and an object which becomes unnecessary (object of selection) from the plural objects 4-1 to 4-m stored in the hard disc 20 (data base 26) (step S55).

[0098]

20 The selection of the object for transmission (unneeded object) in the step S55 is now explained.

The server management unit 25 of the information processing server 2 refers to the malfunction report 41 and the recovery request list 42, contained in the recovery request 40, and to the list indicating the  
25 state of use of the objects 35, stored in the hard disc 20 (data base 26),

to select the unneeded object 4-1 to be installed in the hard disc 10 (database 16) of the mobile terminal 1-j, from among the plural objects (4-1 to 4-m) stored in the hard disc 10 (data base 16). Simultaneously, the server management unit 25 also selects the set-up program code 7-1, associated with the unneeded object 4-1, from the plural set-up program codes 7-1 to 7-m stored in the database 26).

The server management unit 25 of the information processing server 2 refers to the malfunction report 41 and the recovery request list 42, contained in the recovery request 40, and to the list indicating the state of use of the objects 35, stored in the hard disc 20 (data base 26), to select link objects (unneeded objects) 4-2 and 4-3, including the unique information 5-2 and 5-3 and the URL 6-2 and 6-3, which are linked to the unneeded object 4-1 and which are not stated in the recovery request list 42, from the plural objects 4-1 to 4-m stored in the hard disc 20 (data base 26). Simultaneously, the server management unit 25 also selects the set-up program codes 7-2 and 7-3, associated with the unneeded objects 4-2 and 4-3, from the plural set-up program codes 7-1 to 7-m stored in the database 26).

[0099]

The selection of the unneeded object (object of selection) in a step S55 is explained.

The server management unit 25 of the information processing server 2 refers to the malfunction report 41, recovery request list 42 and to the list indicating the state of use of the objects 35 to form a list of unneeded restoration objects 44 shown in Fig.23.

The list of unneeded restoration objects 44 represents the objects of selection 4-11 to 4-13 which become unnecessary when the unneeded objects of selection 4-1 to 4-3 among the objects 4-1 to 4-13 of the updated object group are installed on the hard disc 10 (database 16). In  
 5 the list of unneeded restoration objects 44, there are stated the terminal identification information 8-j as well as the unique information 5-11 to 5-13 and the URL 6-11 to 6-13 of the objects of selection 4-11 to 4-13 by the server management unit 25).

[0100]

10 The server management unit 25 of the information processing server 2 forms install patch data for compressing the unneeded objects 4-1 to 4-3 for enabling the installation (step S56).

When the install patch data are prepared in the step S6, the server management unit 25 forms an install execute sequence 43 for the mobile  
 15 terminal 1-j to install the unneeded objects 4-1 to 4-3 in a preset sequence, as shown in Fig.24. In the install execute sequence 43, the terminal identification information 8-j, the aforementioned preset sequence "1", "2" and "3", the unique information 5-1 to 5-3 and the URL 6-1 to 6-3 of the unneeded objects 4-1 to 4-3 are stated by the  
 20 server management unit 25. The preset sequence "1", "2" and "3" means that the unneeded objects 4-1, 4-2 and 4-3 are installed in the sequence of "1", "2" and "3". If the install processing is discontinued when the objects of selection 4-1, 4-2 and 4-3 are being sent in the sequence of "1", "2" and "3", for example, if the install processing is  
 25 discontinued when the unneeded object 4-2 is being sent to the mobile

terminal 1-j, the server communication controller 22 may refer to the install execute sequence 43 to re-initiate the interrupted install processing (transmission of the unneeded object 4-2 may again be tried) by the server management unit 25 forming the install execute sequence  
5 43.

[0101]

The server communication controller 22 of the information processing server 2 controls the communication device 29 so that the unneeded object of selection 4-1 will be sent to the mobile terminal 1-j,  
10 in accordance with the install execute sequence 43, by the communication function as selected by the user (step S57). Simultaneously, the server communication controller 22 controls the communication device 29 so that the set-up program code 7-1 will be sent to the mobile terminal 1-j by the communication function as  
15 selected by the user.

The OS 11 of the mobile terminal 1-j installs the unneeded object 4-1 from the information processing server 2 on the hard disc 10 (database 16) (step S58). Simultaneously, the OS 11 installs the set-up program code 7-1 from the information processing server 2 on the hard  
20 disc 10 (database 16) in association with the object of selection 4-1.

When the OS 11 has installed the unneeded object 4-11, the communication module 12 of the mobile terminal 1-j sends a notification of confirmation of install completion 46 to the information processing server 2 for indicating that the unneeded object 4-11 has been installed  
25 (restored) (step S59).



[0102]

On receipt by the server communication controller 22 of the information processing server 2 of the notification of confirmation of install completion 46 from the mobile terminal 1-j, there are the  
5 unneeded objects 4-2 and 4-3 not as yet sent to the mobile terminal 1-j (step S-10-yes). Thus, the server communication controller 22 of the information processing server 2 in a step S57 controls the communication device 29 so that the object of selection 4-2 will be transmitted to the mobile terminal 1-j in accordance with the install  
10 execute sequence 43 by the communication function as selected by the user. Simultaneously, the server communication controller 22 controls the communication device 29 so that the set-up program code 7-2 will be transmitted to the mobile terminal 1-j by the communication function as selected by the user.

15 In the step S58, the OS 11 of the mobile terminal 1-j installs the object of selection 4-2 from the information processing server 2 in the hard disc 10 (database 16). Simultaneously, the OS 11 installs the set-up program code 7-2 from the information processing server 2 in the hard disc 10 (database 16) in association with the unneeded object of  
20 selection 4-2.

When the OS 11 has installed the unneeded object 4-2, the communication module 12 of the mobile terminal 1-j sends to the information processing server 2 the notification of confirmation of install completion 46, indicating the fact of the installation of the  
25 unneeded object 4-11, by the communication function as selected by the

user (step S59).

[0103]

On receipt by the server communication controller 22 of the information processing server 2 of the notification of confirmation of  
5 install completion 46 from the mobile terminal 1-j, there are as yet  
unnneeded objects 4-2, 4-3 not as yet sent to the mobile terminal 1-j (step  
S-60-yes). Thus, the server communication controller 22 of the  
information processing server 2 in a step S57 controls the  
communication device 29 so that the unnneeded object 4-2 will be  
10 transmitted to the mobile terminal 1-j in accordance with the install  
execute function 43 by the communication function as selected by the  
user. Simultaneously, the server communication controller 22 controls  
the communication device 29 so that the set-up program code 7-3 will be  
transmitted to the mobile terminal 1-j by the communication function as  
15 selected by the user.

In the step S58, the OS 11 of the mobile terminal 1-j installs the  
unnneeded object 4-3 from the information processing server 2 in the hard  
disc 10 (database 16). Simultaneously, the OS 11 installs the set-up  
program code 7-2 from the information processing server 2 in the hard  
20 disc 10 (database 16) in association with the unnneeded object 4-2.

When the OS 11 has installed the unnneeded object 4-3, the  
communication module 12 of the mobile terminal 1-j in a step S59 sends  
the notification of confirmation of install completion 46, indicating the  
fact of the installation (restoration) of the unnneeded object 4-3, to the  
25 information processing server 2, by the communication function as

selected by the user.

[0104]

When the server communication controller 22 of the information processing server 2 has received the notification of confirmation of install completion 46, there is no object of selection not as yet transmitted to the mobile terminal 1-j (step S60-no). Thus, the server communication controller 22 controls the communication device 29 so that the list of unneeded restoration objects 44 will be transmitted to the mobile terminal 1-j by the communication function as selected by the user (step S61).

The OS 11 of the mobile terminal 1-j refers to the list of unneeded restoration objects 44 from the information processing server 2 to delete the objects of selection 4-11 to 4-13 of the updated group of the objects 4-1 to 4-13 installed on the hard disc 10 (database 16) (step S62). Simultaneously, the OS 11 deletes the set-up program codes 7-11 to 7-13, stored in the database 16 in association with the objects of selection 4-11 to 4-13. The OS 11 stores the information on the installed state "installed" in the database 17 in association with the unique information 5-1 to 5-10 and the URL 6-1 to 6-10.

[0105]

In the steps S58 and S62, the unneeded objects 4-1 to 4-3, and the object group 4-1 to 4-10, having the objects of selection 4-11 to 4-13, deleted are stored as the object group 4-1 to 4-10, shown in Fig.6, in the hard disc 10 (database 16), for restoring the object group 4-1 to 4-10.

[0106]

When the OS 11 of the mobile terminal 1-j has deleted the objects of selection 4-11 to 4-13, the communication module 12 of the mobile terminal 1-j sends to the information processing server 2 a notification of confirmation of deletion completion 37, indicating the deletion of the objects of selection 4-11 to 4-13, by the communication function as selected by the user (step S63).

[0107]

On receipt of the notification of confirmation of install completion 47 from the mobile terminal 1-j, the communication controller 22 of the information processing server 2 forms a list of state of use of the objects 45. The OS 22 causes the list of state of use of the objects 45 to be stored in the hard disc 20 (data base 26) (step S64).

Referring to Fig.25, there are stated, by the server management unit 25, the terminal identification information 8-j, unique information 5-11 to 5-13 and the URL 6-11 to 6-13 of the presently deleted objects of selection 4-11 to 4-13, while there are stated, by the server management unit 25, the unique information 5-4 to 5-10 and the URL 6-4 to 6-10 of the set of objects 4-4 to 4-10, having the objects of selection 4-11 to 4-13 deleted, and the unique information 5-1 to 5-3 as well as the URL 6-1 to 6-3 of the newly installed unneeded objects 4-1 to 4-3, as the latest information stored in the mobile terminal 1-j.

[0108]

As described above, in the install processing of the information processing system according to the embodiment of the present invention, the information processing server 2 comprehends the updated object

group of the objects 4-4 to 4-13 installed in the mobile terminal 1-j. Thus, in case a malfunction has occurred in executing the objects of selection 4-11 to 4-13 installed e.g. on the hard disc 10 (database 16), that is, in case a malfunction has occurred as a result of installation of  
5 the objects of selection 4-11 to 4-13, the updated object group of the objects 4-4 to 4-13 installed in the hard disc 10 (database 16) can be restored to the original group of the objects 4-1 to 4-10.

In case the objects, where the malfunction has occurred, are the objects of selection 4-11 to 4-13, installed on the hard disc 10 (database  
10 16), the malfunction report 41 is relevant to the objects of selection 4-11 to 4-13. In the information processing system according to the present invention, development of the objects 4-1 to 4-m and the set-up program codes 7-1 to 7-m by the manager of the information processing server 2 may be supported based on this malfunction report 41.

15 [0109]

Fig.26 shows the interruption processing and the install re-initiation processing, carried out during the restoration processing, as the operation of the information processing system according to the embodiment of the present invention.

20 [0110]

On power down of the mobile terminal 1-j, or on movement of the mobile terminal 1-j from the communication zone to outside the communication zone, the communication between the mobile terminal 1-j and the information processing server 2 is interrupted. If, when the  
25 communication between the mobile terminal 1-j and the information

processing server 2 is interrupted, the restoration processing has as yet not come to a close, the server communication controller 22 of the information processing server 2 controls the communication device 29 so that the restoration processing will be discontinued (interruption processing will be carried out) in accordance with the install execute sequence 43 (step S70).

The communication between the mobile terminal 1-j and the information processing server 2 then becomes possible (step S71-yes). In this case, since the restoration processing has as yet not come to a close (step S72-no), the communication module 12 of the mobile terminal 1-j controls the communication device 19, by the communication function as selected by the user, so that the install re-initiation request 45 will be sent to the information processing server 2 (step S73).

On receipt of the install re-initiation request 45, the server communication controller 22 of the information processing server 2 controls the communication device 29 so that the restoration processing interrupted will be re-initiated in accordance with the install execute sequence 43 (step S74).

[0111]

Thus, with the restoration processing of the information processing system according to the embodiment of the present invention, in which the unneeded objects 4-1 to 4-3 are sent in a preset sequence to the mobile terminal 1-j, in accordance with the install execute sequence 43, it is possible to interrupt the restoration processing in case of

interruption of communication between the mobile terminal 1-j and the information processing server 2 and to re-initiate the restoration processing, thus interrupted, in accordance with the install execute sequence 43, in case the communication between the mobile terminal 1-j and the information processing server 2 has become possible.

[0112]

The meritorious effects of the present invention are summarized as follows.

In the install processing by the information processing system according to the present invention, it is only sufficient that the user selects the unique information 5-11 and the URL 6-11 of the needed object 4-11, as an object desired to be used, with the aid of the mobile terminal 1-j. Thus, with the information processing system according to the present invention, the user is able to promptly acquire the object, desired to be used, without it being necessary to request a download menu (install menu) from a server, with the aid of the terminal, as in the conventional information processing system.

[0113]

With the install processing by the information processing system according to the present invention, the link objects 4-12 and 4-13, linked to the needed object 4-11, may also be promptly acquired as the objects employed by the user, by the unique information 5-11 and the URL 6-11 of the needed object 4-11, as selected by the user of the mobile terminal 1-j.

[0114]

With the install processing by the information processing system according to the present invention, the unneeded objects 4-1 to 4-3, which become unnecessary when the mobile terminal 1-j has installed the objects of selection 4-11 to 4-13 on the hard disc 10 (database 16) by the mobile terminal 1-j, are deleted. As a consequence, it is unnecessary for the user to search and delete the unneeded objects 4-1 to 4-3, such that the user is able to use the updated group of objects 4-4 to 4-13, installed (updated) on the hard disc 10 (database 16), without confusion.

[0115]

With the install processing by the information processing system according to the present invention, the information processing server 2 sends the objects of selection 4-11 to 4-13 (the needed object and the link objected linked to the object 4-11) in a preset sequence to the mobile terminal 1-j, so that it is possible to discontinue the install processing when the communication between the mobile terminal 1-j and the information processing server 2 is interrupted, and to re-initiate the once discontinued install processing, in accordance with the install execute sequence 33, in case the communication between the mobile terminal 1-j and the information processing server 2 has become possible.

[0116]

With the install processing by the information processing system according to the present invention, the information processing server 2 comprehends the updated group of the objects 4-4 to 4-13, installed on the mobile terminal 1-j. Thus, in the restoration processing of the



information processing system according to the present invention, in case a malfunction has occurred in executing the objects of selection 4-11 to 4-13, installed on the hard disc 10 (database 16), the updated group of the objects 4-4 to 4-13, installed on the hard disc 10 (database 16),  
5 can be restored to the former group of the objects 4-1 to 4-10.

[0117]

If the objects suffering from the malfunction are the objects of selection 4-11 to 4-13, installed on the hard disc 10 (database 16), the malfunction report 41 is relevant to the objects of selection 4-11 to 4-13.  
10 With the information processing system according to the present invention, it is possible to support the development of the objects 4-1 to 4-m and the set-up program codes 7-1 to 7-m, carried out by the manager of the information processing server 2:

[0118]

15 In the restoration processing of the information processing system according to the present invention, in which the information processing server 2 sends the unneeded objects 4-1 to 4-3 in a preset sequence to the mobile terminal 1-j in accordance with the install execute sequence 43, it is possible to discontinue the restoration  
20 processing in case the communication between the mobile terminal 1-j and the information processing server 2 is interrupted, and to re-initiate the once discontinued install processing, in accordance with the install execute sequence 33, in case the communication between the mobile terminal 1-j and the information processing server 2 has become  
25 possible.

It should be noted that other objects, features and aspects of the present invention will become apparent in the entire disclosure and that modifications may be done without departing the gist and scope of the present invention as disclosed herein and claimed as appended herewith.

- 5        Also it should be noted that any combination of the disclosed and/or claimed elements, matters and/or items may fall under the modifications aforementioned.